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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,296	01/05/2001	Fumio Tajima	381NP/43816CO	3393

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CROWELL & MORING, LLP
INTELLECTUAL PROPERTY GROUP
P O BOX 14300
WASHINGTON, DC 20044-4300

EXAMINER

NGUYEN, TRAN N

ART UNIT PAPER NUMBER

2834

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/754,296

Applicant(s)

TAJIMA ET AL.

Examiner

Tran N. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 18-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 26 and 27 is/are allowed.
- 6) ☐ Claim(s) 18-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08946581.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP7-20050** (hereafter **JP'050**) in view of **Murakami et al (JP 205436)**.

JP'050 (figs. 1-3) disclose a permanent magnet electric rotary machine comprising: a stator (1) having winding (3); a rotor (4) having a plurality of permanent magnets (PM) (5) being inserted in insertion holes, wherein the magnets are arranged so that two magnetic gaps (6) are located in both sides of a peripheral direction of the magnets and between the permanent magnets and auxiliary magnetic poles, wherein the rotor core's areas between respective two adjacent magnets is read as the auxiliary rotor poles (fig 4). The air gaps between the magnet and the auxiliary magnetic poles change the flux density between the magnet and the auxiliary poles. JP '050 substantially discloses the claimed invention, except for the newly added limitations of the PM to provide a reversed polarity alternately.

Murakami, however, teaches a rotor (3) having a plurality of permanent magnets (PM) (8) being inserted in insertion holes, wherein the PM to provide a reversed polarity alternately

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(figs 1-2). Those skilled in the art would understand that a rotor having two opposite polarity adjacent magnets would enable the leaking magnetic fluxes become mutually opposite; therefore, counter torque would be prevented from being generated. Furthermore, **a permanent magnet rotor having a plurality of PMs with respective reversed polarities being alternatively arranged is well known in the art (see JP 8-256440, US 5510662, US 5258678, US 4486679).**

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the JP'050 PM rotor by embodying the rotor with a plurality of PMs being inserted in insertion holes, wherein the PMs to provide a reversed polarity alternately, as taught by Murakami. Doing so would prevent counter torque from being generated by mutualizing the leakage flux between the adjacent PMs.

2. **Claims 20-21 and 22-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP'050** in view of **Kliman (US5117553)**.

JP'050 discloses the claimed invention, except for the limitations of the following:

- (1) air gap is filled with nonmagnetic material, and
- (2) an electromotive vehicle comprising the PM machine of the claimed invention.

Kliman, however, teaches a permanent magnet (PM) rotor having PM elements (14a-d) embedded in the core slots, wherein the slot is provided with nonmagnetic material (20) to support the magnet and allow the use of premagnetized magnets.

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Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the JP'050 PM rotor by providing nonmagnetic material to filled in the air gap, as taught by Kliman. Doing so would provide support for the magnet and improve mechanical integrity of the rotor.

Regarding the limitations of an electromotive vehicle comprising the PM machine of the claimed invention, those skilled in the art would know that electromotive vehicles are well known to employ an electric rotating machine with a PM rotor. Thus, it would have been obvious to one skilled in the art at the time the invention was made to employ the JP'050, in view of Kliman, in an electromotive vehicle. Doing so would require only routine skills of a worker in the art to determine a suitable applications of the machine.

Allowable Subject Matter

3. **Claims 26-27** are allowed.

Reason for Allowability

4. The following is an examiner's statement of reasons for allowance: the primary reason for the allowance is the including of the limitations of a permanent magnet electric rotary machine comprising: a rotor having a plurality of permanent magnets, wherein the magnet extends substantially the entire axial length of the rotor. JP'050, fig 2, shows that the magnet having

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length $\frac{1}{2} L$ of the entire axial length L of the rotor core. Thus, the above mentioned limitations are distinct from the prior art of the record.

Response to Arguments

5. Applicant's arguments filed on 5/20/03 have been fully considered but they are not persuasive.

The applicant arguments are the following:

(1) The applicant argues that the JP050, a permanent magnet synchronous electric motor has permanent magnets 5a having the same polarity in the radial direction are inserted into the slots. Therefore, JP050 does not have auxiliary magnetic pole as in the claimed invention.

(2) the applicant alleges that the Examiner alleges that rotors having permanent magnets alternately arranged in polarities are well known in the art, citing to JP436 as an example. The Examiner then goes on to state that the "rationale" for applying JP436 in combination with JP050 is the teaching of an alternate polarity arrangement for permanent magnets in a rotor. Absent from this "rationale", and what makes such rationale legally impermissible, is the fact there is no motivation or suggestion noted by the Examiner for why one would modify JP'050 to use an alternate polarity arrangement. Clearly, the Examiner's "rationale" is merely the legally impermissible. The applicant further argues that the JP050, a permanent magnet synchronous electric motor has permanent magnets 5a having the same polarity in the

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radial direction are inserted into the slots. Therefore, JP050 does not have auxiliary magnetic pole as in the claimed invention.

In response to argument (1), first of all, the applicant's attention is drawn to the claimed language in claims 18-19 and figure 4 of JP050, "*auxiliary magnetic pole portions provided between two adjacent plural permanent magnets, wherein a magnetic air gap is provided in both sides of a peripheral direction of said plural permanent magnets*" fig 4 of the JP050 shows the magnet embedded in the core, and between two adjacent magnets is a magnetic core portion which is read as the recited "*auxiliary magnetic pole portions provided between two adjacent plural permanent magnets*".

In response to argument (2) stating that *the applicant alleges that the Examiner alleges that rotors having permanent magnets alternately arranged in polarities are well known in the art, citing to JP436 as an example. The Examiner then goes on to state that the "rationale" for applying JP436 in combination with JP050 is the teaching of an alternate polarity arrangement for permanent magnets in a rotor.*

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. **But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made**, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392,

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170 USPQ 209 (CCPA 1971). The applicant is invited to see the reasoning for rejection again, where the Examiner clearly states that **those skilled in the art would understand that a rotor having two opposite polarity adjacent magnets would enable the leaking magnetic fluxes become mutually opposite; therefore, counter torque would be prevented from being generated.** Along with this well-known knowledge of magnetic flux leakage being canceled out between two magnets of opposite polarities, the Examiner would like to elaborate, for the argumentative support, that in a permanent magnet electric rotating machine having a electromagnetic stator and permanent magnet rotor having a plurality of magnets, there are two well known engineering design choices of manipulating the magnetic polarities. One is to have the magnets of the same polarity and exciting two adjacent stator poles simultaneously in opposite polarities, thereby creating a flux distribution to rotate the rotor, or another way is to alternately arrange the magnets in opposite polarities and the stator winding can be supplied with an DC current source to create a flux distribution to rotate the rotor. In this instant case, JP050 magnets are in the same polarity, but the Examiner's position is that permanent magnet rotor with alternative arranged opposite polarities are well known in the art (for further support of this statement, see newly cited references along with JP 8-256440, US 5510662, US 5258678, US 4486679, as listed in the previous Office Action.

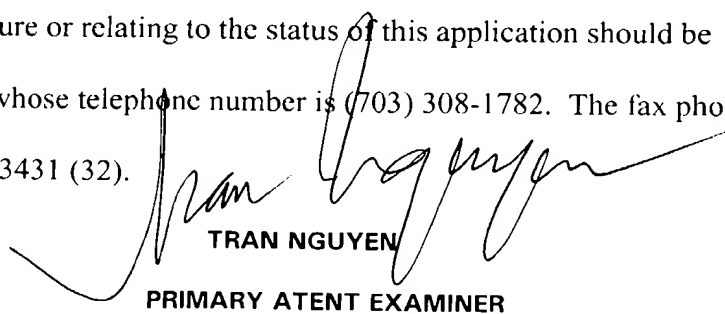
All claims are drawn to the same invention claimed and could have been finally rejected on the grounds and art of record in the previous Office Action. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after a RCE.

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See FTO Form 892 for cited references.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Nguyen whose telephone number is (703) 308-1639.
8. Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-1782. The fax phone number for this Group is (703) 305-3431 (32).


TRAN NGUYEN
PRIMARY ATENT EXAMINER

TC-2800